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THE CROP REPORTING SYSTEMS OF EUROPE

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Crop reporting, as that term is now understood, is of comparatively recent origin in Europe. Most of the systems and methods now in use have been introduced during the last 50 years. Some of them have been in operation but a few years.

The gathering of agricultural statistics through census enumerations, however, is of much earlier origin, dating back in some of the European countries to the middle ages. During the reign of Charlemagne, it is recorded that he ordered an agricultural census to be taken throughout his kingdom. In Spain there is a record of an agricultural census taken about the middle of the 18th century.

No European country, however, had succeeded in establishing a comprehensive crop reporting system in which crop conditions were expressed in mathematical terms until some time after the system now used in the United States had been in successful operation. During the Civil War reports were made for the northern States; at its close the system was extended to cover all States. In England, France, and Norway, some attempts had been made at an earlier date to make reports, mostly of a descriptive nature, concerning crop conditions, and in Prussia as early as 1852 some reports are to be found in which the yield of crops was reported on a percentage basis with 100 as a standard, representing an "imaginary normal crop," but apparently no effort was made to estimate in actual units of measure per unit of area.

In recent years the science of crop reporting has developed rapidly throughout the world until today practically all of the civilized countries are gathering and publishing crop reports in some form or other. Progress has been especially rapid since the organization of the International Institute of Agriculture at Rome, to which most of the civilized nations now adhere and make reports.

The statistical organization and methods used in the various European countries for gathering crop and live stock statistics

and making crop reports vary widely. To present a complete picture of the crop reporting systems used throughout Europe, it would be necessary to give a separate description of the methods in vogue in each country. This would require a large volume. Even in the British Isles differences exist in the methods used in England and Scotland and Ireland, particularly in Ireland. The writer will, therefore, after a general discussion, give the details of two or three countries in which the crop reporting systems have reached a high degree of perfection but which are quite different in their character.

ORGANIZATION FOR WORK

In many countries the Department of Agriculture is responsible for all of the agricultural statistical work. This is true in England, Ireland, Scotland, France, Belgium, Holland, Hungary, and probably in several other countries. There has been a tendency in Europe, however, to centralize all the statistical work of the Government under one statistical bureau and we find central bureaus of statistics in Norway, Sweden, Denmark, Germany, Poland and Czecho-Slovakia, which are concerned with agricultural statistics as well as other kinds. Even where this centralization has occurred the gathering of condition reports during the growing season is usually left to the Department of Agriculture. Norway and Czecho-Slovakia may be cited as examples of where the central statistical bureau gathers information as to acreage, numbers of live stock, and publishes final production figures, while the Department of Agriculture gathers and publishes monthly crop condition reports.

SOURCES OF INFORMATION

One familiar with the American system of securing reports from a number of independent sources with a view to using them as checks upon each other is struck with the lack of such checks in most of the European systems of crop reporting and the possible danger of error in the results.

The number of correspondents making reports of condition is rather limited in most countries. In England these number about 350, in Norway about 50 and in Denmark about 100. In Ireland there is about one reporter to each county; in all of

Sweden there are apparently about 100 reporters; in Germany about 7,000, in Poland about 3,000, in Czecho-Slovakia 1,400, etc.

In the United States a great deal more of the statistical compilation work is done in the central office than in most European countries. As a general rule the reports undergo a process of condensation before they are finally forwarded to the central office. In France, for instance, the system is such that the central office receives but one report from each Department, instead of thousands of reports from the smaller units, within the Departments. A Department corresponds in some respects to one of our States. The administrative units in France consist, in ascending order of size, of communes, cantons, arrondissements and departments. Certain officials in each commune gather and compile the statistics for that commune. These statistics, or reports, are forwarded to the officials in charge of the work in the canton. The canton summaries are in turn forwarded to the central office of the arrondissement. The arrondissements within a Department in turn send their summaries to the Department. Each Department forwards a summarized report to the Central Bureau at Paris. This cumulative plan greatly simplifies the work for the central office but apparently makes it difficult to check the returns for the smaller subdivisions.

CHARACTER OF REPORTERS

One of the interesting facts noted in many countries is the use which is made of agricultural teachers and instructors, agricultural inspectors, and local administrative officials, such as sheriffs, notaries, mayors, burgomasters, etc., for the gathering and furnishing of agricultural statistics and reports. The work of gathering agricultural statistics and making reports is frequently made a part of the regular duties of these local administrative officials. Because of the control which the central government exerts in most countries over local affairs it is possible to compel such local officials to make reports at the time and in the way desired by the central organization. In but a few countries are the reporters paid especially for their work, the exceptions being England and Hungary.

In the United States comparatively little use is being made of agricultural teachers, county agents, and other governmental or semi-governmental officials or representatives, as crop correspondents. This may be due to the fact that the rank and file of the farmers of this country possess such a high degree of intelligence that it is possible for the Department to obtain its information direct from the farmers themselves without the aid of local, agricultural or other government agents. Furthermore, the regular duties of such persons are usually sufficient to keep them fully employed.

METHODS USED FOR REPORTING CROP CONDITION

There are three rather well-defined methods used in Europe for expressing the condition of crops during the growing season. These may be termed the percentage method, with 100 representing a normal or average; the numerical symbol method, using figures ranging from 1 to 6 or 6 to 1; and the descriptive method, where adjectives instead of numbers are used.

In England, Scotland, and Norway the percentage method is used, 100 representing a 10-year average yield. In France numbers are used corresponding to percentages, 100 representing excellent, 80 good, 60 not so good, 50 fair, 30 poor, and 20 failure. In Holland, a similar system exists to that in France, 100 representing excellent, 90 very good, 70 good, 60 fairly good, 50 normal, 40 below normal, 30 poor, 10 very poor, and 0 failure. In Ireland, Spain, Italy, Switzerland, Roumania, and Belgium the descriptive method is used; that is, adjectives instead of figures are used to express condition, the words commonly used being, excellent, very good, good, average or normal, fair, poor, failure, etc. In Germany, Hungary, Poland, Czecho-Slovakia, and Austria, the condition of growing crops is expressed in figures ranging from 1 to 5, and in some cases to 6, 1 representing excellent, or very good, 2 good, 3 normal or average, 4 not so good, and 5 failure. In Denmark, Sweden, and Bulgaria, similar numbers are used, but they are reversed, 6 or 5 representing an excellent crop, and 1 a poor crop with 0 representing failure. In those countries where the numerical symbols are used, 3 or 4 or 3.5 is usually considered the average or normal figure. In Finland,

the numbers range from 8 to 1, 8 meaning abundant, 7 good, 6 above average, 5 average, 4 less than average, 3 very poor, 2 practically failure, 1 failure. In Switzerland, the correspondents report condition in adjectives ranging from "very good" to "very poor," which are converted into numbers in the central office before publication.

All countries which report to the International Institute at Rome are requested to "report the condition of growing crops in the form of a percentage, 100 representing an average condition, which if uninfluenced by abnormal circumstances would give a probable yield per unit of surface equal to the average yield of the past 10 years," but for local publication the results are usually published in the form in which they are gathered, and not on the basis outlined by the institute.

USE OF THE WORD "NORMAL"

In no country in Europe is the word "normal" used in crop reporting in the same sense as in the United States, although the word itself is used by several countries. In the United States "normal" represented by 100 per cent has been used for years as the basis for reporting the condition of growing crops. In the instructions to reporters in the United States for reporting on the condition of crops, the following is found:

"The condition of the crops asked for is not in comparison with a condition at any former period, but with a 'normal' condition of growth and vitality such as would be expected at this time in a crop starting out under favorable conditions and not subjected afterwards to unfavorable weather, insect pests, or other injurious agencies. In estimating condition of crops in comparison with a normal condition of growth and vitality giving promise of a full yield per acre, 100 is the basis."

While this definition of normal is rather special or technical, it is clearly understood by reporters and has proved itself to be an extremely satisfactory basis for reporting.

In England, the word when used has reference to an average crop and reporters in reporting upon condition are instructed to state the probable yield per acre as a percentage of the average yield in the same district, their reports being in the form of a percentage above or below the average yield for a period of ten years which is represented by 100.

In Norway, which has recently changed to a percentage basis from a numerical symbol basis, the word "normal" is

used in much the same sense as in England, and is defined "to be the average quantity or quality of crops for a series of years." In discussing the basis for reporting condition, the following comment is found in a recent statistical report of the Norwegian Statistical Bureau:

"When a farmer gives the figures of the normal yield for a series of years, he is likely not to take years of crop failures into consideration. What he calls normal crops is what he expects his farm will yield. He does not calculate the average of each year's crop, but remembers the best and the most general crops. He does not take into consideration the years when the crop failed, and he is likely to see the general crop in too high figures. As a consequence his estimate, expressed in percentage of the expected normal yield, is placed too low. The estimates give the best results for the kinds of crops which are least subject to great variations."

That such estimates are too low may be illustrated by the following hypothetical example. Suppose the actual average yields for five years for wheat were as follows: First year, 35; second year, 10; third year, 25; fourth year, 30; fifth year, 40. This would give an actual average yield for the five years of 28 bushels. In reporting, however, the farmer is not likely to remember the small yield of 10 bushels, and will average in his mind the better years, which might give him an average yield let us say of 32 bushels. Suppose the average yield for the year for which he is reporting is actually 32 bushels. He will report 100. The average for the last five years is actually 28 bushels, so instead of reporting 100 he should have reported 116, if he had had the true average in mind. This is one of the weaknesses of using an average rather than a "normal" as used in the United States in reporting a condition and makes it necessary to allow for a greater bias in reports. The Canadian Bureau of Statistics has apparently experienced this difficulty during the current year.

METHODS OF ESTIMATING ACREAGE

The methods used for reporting acreage in crops vary quite as widely as the methods used for reporting condition. In England, a careful annual census is taken in June by paid reporters. This is also true in Scotland and up to 1919 an annual census was taken in Ireland by the state constabulary

force. Since 1919, because of the unsettled condition of the country, the acreage has had to be estimated. These estimates have been based on a large number of returns from individual farms. The results have been satisfactory to date. The method used is very similar to the individual farm survey method used in the United States, except that a larger number of samples were used. The method is very effective where the total acreage does not vary materially from year to year.

A census is taken annually in Denmark of acreage and numbers of live stock, also in Hungary, and to all intents and purposes, in France. In France, however, preliminary estimates are made and the final results of the census are not available until a considerable time after the crops reported on have been harvested.

In Norway, prior to 1922, no attempt had been made to estimate the yearly changes in acreage, the acreage as reported in their decennial census being used as a basis for estimating production in the inter-census years. This was likely to give rise to serious error. Steps were taken in 1921 to develop a plan for making yearly estimates of changes. In Sweden, prior to the war, no effort was made to estimate yearly changes in acreage, but during the war an annual census was taken and a plan has now been developed whereby one-eighth of the country will be surveyed each year and the returns used for correcting the yearly acreage figures. This is in reality in the nature of a sample census.

The methods used in Germany for estimating acreage are two in number. One is known as the individualistic method in which schedules are sent to individual farmers to be filled out. The other method provides for reports being sent in by commissioners appointed for each distinct community. It is left to the decision of the various provinces as to which method shall be used. It has been found, however, that the individualistic method is apt to give returns too low.

In countries like Hungary where the farmers live in villages and there is a corps of paid crop correspondents, it is relatively simple to make an annual census of acreage.

QUANTITATIVE ESTIMATES

Comparatively few European countries have made any attempt up to this time to convert condition reports into quantitative forecasts of probable production during the growing season. In England, Ireland, Scotland, Norway, Denmark, Spain, Finland, France, Italy, Poland, Portugal, Roumania, Switzerland, Austria, and Czecho Slovakia, no attempt was made to make such conversions prior to this year. In 1922, however, the reports of the International Institute indicate that England and Finland have started to make pre-harvest forecasts. In Sweden a forecast of grain production is made one month prior to harvest and in Germany similar forecasts have been made just prior to harvest. Poland has also made some preliminary estimates. In Hungary, quantitative forecasts are made for grain beginning with July 1, and for potatoes, corn, and sugar beets beginning September 1. Instead of attempting to convert condition reports into their yield equivalents, however, the reporters are asked to make their estimates in terms of actual yields per unit of area. Belgium, Greece, Spain and Bulgaria also report quantitative figures to the International Institute of Agriculture prior to harvest.

While, as stated above, but few countries have attempted of their own accord to convert condition figures into forecasts of production expressed in a quantitative way, it would be a comparatively simple process in those countries which have records for a series of years of monthly reports of condition and final yields expressed in mathematical terms. The efforts of the International Institute of Agriculture to develop quantitative forecasting during the growing season will no doubt eventually bring this about.

The question is frequently asked in this country, as well as abroad, why does the United States Department of Agriculture not ask for estimates in actual yields per acre rather than condition figures, which must be converted by the central office into yields per acre? A number of experiments have been made to test out the two methods and it has been found that more accurate results are secured by having the reporters prior to harvest, make their estimates in percentage figures, rather than estimated average yields. The deviation in the

reports from the average is very much less when percentage figures are given than when estimated average yields per acre are given, and in the case of cabbage it has been found that even after harvest, yields can be more accurately determined from percentages than from actual yield estimates.

In several countries the statisticians are now studying the problem and have worked out the relationship between the monthly condition figures and the final yields as reported after harvest with a view to establishing pars similar to those used in the United States. This subject was discussed at the twelfth annual meeting of the Scandinavian Statistical Congress, an organization composed of representatives from the statistical bureaus of the Scandinavian countries, Finland, and Germany. In one of the papers presented at the meeting, a series of tables and charts were presented showing for a number of crops in Denmark and Sweden the monthly condition reports with final yields. One of the leading statisticians in Sweden has been studying the subject and has worked out the correlation between the monthly figures and the final yields. He has demonstrated the feasibility of making rather accurate forecasts prior to harvest.

LIVE STOCK

The leading countries of Europe make annual reports of numbers of live stock on farms. In several countries this amounts to practically an annual census. This is true of England, Scotland, Denmark, Germany, Holland, Hungary, and France, and probably one or two others. Very few countries, if any, attempt to estimate the changes in numbers of live stock from year to year on a percentage basis similar to that used in the United States, while a number of countries are content with a decennial or other periodical census taken at longer intervals than a year. In Ireland, since 1919, annual estimates of numbers of live stock on farms have been based on a sampling method similar to that used in that country for determining acreage.

PUBLICATION OF CROP REPORTS

Several of the European countries have an official daily gazette, as, for example, the *Journal Officiel* in France, in which crop reports are published immediately after they are

compiled. In other countries the reports are published in small bulletins, or are given to the press in form of mimeographed statements, and later published in greater detail in monthly or other periodical official bulletins or journals published by the Government. Annual yearbooks, similar to that issued in the United States, are published by several countries. The Economic Library of the Department of Agriculture at Washington receives practically all of such bulletins and periodicals published throughout the world.

EFFECT OF THE WAR ON STATISTICS

During the late war the volume of statistics in practically every European country was greatly increased, due largely to the control of food prices and food supplies by the Government and the necessity of having accurate knowledge of the quantities of food available. Frequent surveys and investigations were made, not only of production, but of stocks on hand, and many expedients were used to stimulate production.

Since the war those engaged in statistical work have endeavored to incorporate in the regular statistical systems of their country some of the special methods and reports used during the war. These efforts have not been very successful, however, due to the necessity of keeping down governmental expenditures. The net result of the war, therefore, has been unfavorable rather than favorable in its effect on the accuracy and scope of agricultural statistics in Europe. The great changes which have occurred in the boundary lines of many countries, the present shortage of funds for doing statistical work, and the general feeling of unrest are all affecting the situation. In some of the smaller countries there is a tendency to regard agricultural statistics as a luxury, consequently, the funds for statistical work are left at a minimum.

THE CROP REPORTING SYSTEM OF ENGLAND AND WALES

The work of gathering and publishing crop and live stock reports in England and Wales is carried on by a branch of the Ministry of Agriculture and Fisheries. A corps of 350 paid crop reporters is maintained who take an annual census of the acreages and number of live stock as of June 1 in each year. They also make monthly reports on crop conditions and yields running throughout the year. These reporters are selected

and paid by the Ministry of Agriculture and Fisheries. They are not usually farmers themselves but are what are known as "land valuers." The census is taken by mailing out to each landholder blanks to be filled out and returned to the reporter. Those who fail to return the blanks are visited personally. During the war the filling out of the blanks was made compulsory. Beginning in January each year, and running throughout the year, monthly blanks are sent out to the reporters which ask for considerable information, including condition of crops, live stock, supply of labor, progress of planting and sowing, etc. The reporters are instructed to report the condition of crops during the growing season as a percentage above or below the ten-year average yield which is represented by 100.

The January 1 schedule, which illustrates the character of the monthly crop schedule, includes the following questions: (1) Progress of autumn cultivation and sowing—*a*, wheat; *b*, oats; *c*, beans. (2) Present appearance of autumn-sown crops—*a*, wheat; *b*, oats; *c*, beans. (3) Approximate area sown with each crop to date, as compared with the area sown at the same date last year—*a*, wheat; *b*, oats; *c*, beans. (4) Are potatoes keeping well or not? (5) General quality and condition of turnips and swedes when lifted. (6) Condition of "seeds" as regards plant vigor and healthiness. (7) Condition of ewes and of stock generally and general outlook as regards winter keep. (8) Are calves being reared to a greater or less extent than last year? (9) Supply of labor. (10) Weather during December and effect on autumn cultivation and sowing, germination and growth of autumn-sown crops, lifting of turnips and swedes, and live stock.

The questionnaire sent out on September 1 contains the following: (1) Approximate date of commencement of harvest—*a*, wheat; *b*, barley; *c*, oats. (2) Progress of harvest and quality of grain. (State roughly what proportions of the crops have been harvested, and the conditions affecting harvest. Also report on the quality and condition of the grain.)—*a*, wheat; *b*, barley; *c*, oats; *d*, beans; *e*, peas. (3) Present condition of crops as regards plant vigor and healthiness. Mention any unusual prevalence of disease or insects affecting particular crops and whether potatoes are sprouting, etc.—*a*, potatoes; *b*, turnips and swedes; *c*, mangolds. (4) Probable

yield as compared with an average crop—*a*, wheat; *b*, peas; *c*, barley; *d*, potatoes; *e*, oats; *f*, turnips and swedes; *g*, beans; *h*, mangolds. (5) Progress of cultivation. (6) Condition of seeds. (7) What steps are being taken to grow winter keep to make good the expected shortage of roots? (8) Condition of pastures and aftermath. (9) Progress of cattle and sheep. (10) Supply of labor. (11) Weather during August and effect on agriculture generally.

In October, reporters send in estimates of the average yield of wheat, barley, oats, beans, peas, hay and hops, and in November estimates of the yield of potatoes and root crops. These yields are multiplied by the acreage in the various districts as reported earlier and total production figures arrived at. (No attempt was made to forecast production before harvest prior to 1922.)

In addition to the information published monthly concerning crop and live stock production, a corps of market reporters is maintained and reports are received for 160 cities on live stock prices. The prices on other agricultural products are reported from eight centers. During the war there was a law which required the purchasers of domestic grain to report the amount of prices paid. From these reports a weighted average from each section was worked up in a report for the country as a whole.

Estimates are made by the reporters each year of the stocks of grain and hay in farmers' hands. These reports were started during the war for military purposes and are being continued. They are not published, however, being regarded as confidential.

Schedules used by the reporters in gathering acreages and numbers of live stock are furnished by the Ministry, one for each holding. These numbered in 1919 about 417,000. The tabulation of the returns is done in the central office in London, and the results are published in *Agricultural Gazette*, an official journal of the Government.

THE CROP REPORTING SYSTEM OF HUNGARY

Hungary has probably the most complete crop reporting system in Europe. For years, the Hungarian Government has taken great pride in its statistical publications.

Although there is a central statistical bureau, the actual handling of the gathering and compiling of crop statistics

and the issuance of reports are under the direction of the Minister of Agriculture. The statistical work of the office is divided into several branches, one of which has direct charge of the gathering and publishing of agricultural production statistics. Another division is concerned with the gathering and publishing of statistics concerning imports, exports, wages, etc.

A complete crop reporting calendar is published at the beginning of each year. This calendar shows first, the number of the report, the reports being numbered consecutively beginning with the first one made in January; second, the date on the morning of which it must be mailed by the local reporter to the district reporter; third, the color of the blank to use; fourth, the form number of the printed blank; fifth, the principal subject of the report; sixth, the date the district reporter must report to Budapest; and seventh, date and hour of publication at Budapest. The dates on which the districts reporters are required to send telegraphic information are also shown.

This calendar for crop reporters is contained in a book in which the crop blanks for a year are bound. On each crop reporting date the local crop reporter detaches the blank for that particular date, fills it out, and sends it to the district reporter called Agricultural Inspector, of which there are 168, one for each district. The district reporter combines the reports for his district for a report to the central office at Budapest. The district reporters are also supplied with telegraphic blanks for reporting unusual occurrences or conditions which materially affect the crops.

In addition to this book of blanks, each reporter prior to the war was furnished with a handbook of agriculture corresponding somewhat in size to our annual Yearbook, but quite different in contents. This handbook contained a set of tables and weights and measures, a calendar of important dates and events, facsimile copies of the crop reporting blanks for a year, and a description of the crop reporting system. It also contained a great deal of material relating to plant and animal diseases and insect pests, together with methods for their eradication and control. It was in fact, a very valuable book and if it were possible to prepare such a book for crop reporters in the United States, it would be very desirable.

The system of estimating condition of growing crops used in Hungary is similar to that of Germany, in that 1 represents the best condition and 5 the poorest. These numbers are used until June for grain and until September for potatoes, corn and sugar beets. On July 1 a quantitative estimate in quintals is made of grain crops and in September of corn, potatoes and sugar beets, and each month thereafter until the completion of the harvest.

Each county is divided into districts for crop reporting purposes. Each district has an agricultural inspector or reporter who is a paid employee and sends in the crop reports for his district. These crop reports for the district are based upon reports received from local reporters in each little community. The local reporter is frequently the principal of a school or a leading farmer. The inspector summarizes these various reports and sends them to Budapest where they are published on dates set a year in advance. They appear first in mimeograph form and at the end of the year a printed annual report is published. Because of shortage of funds the statistical publications of the Hungarian Government have been greatly reduced.

The fact that nearly all of the farmers of Hungary live in small villages makes the work of the crop reporter relatively easy. He is able to see practically all of the farmers daily by visiting the Town Hall or other places where the farmers gather to talk matters over. Because of the village organization of farming, it is possible for the reporters to make, without much expense, an annual census of acreage. This is also true of live stock, but in the case of live stock it is the notary public or veterinarian of the village who sends in the reports. Prior to the war an annual census of live stock was taken in March of each year, but this plan has been somewhat interfered with since that time. In fact, according to recent advice several modifications of the system outlined above have had to be made in connection with the 1922 reports.

No reports are made in Hungary at the present time on farm prices. The prices of many commodities appear in the daily press however.

NOTE.—The blank forms used in most of the European countries as well as detailed descriptions of methods used are on file in the Bureau of Agricultural Economics.